



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/697,826

10/30/2003

Young-Gun Ko

SAM-0449

9264

7590

03/09/2006

Anthony P. Onello, Jr.
MILLS & ONELLO LLP
Suite 605
Eleven Beacon Street
Boston, MA 02108

EXAMINER

CRANE, SARA W

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/697,826	KO ET AL.	
	Examiner	Art Unit	
	Sara W. Crane	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-46 and 72-95 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-46, 72-95 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant notes that the drawings have not been indicated as acceptable.

Drawing approval, in the sense of formal objections to the drawings, now occurs as part of the pre-exam process, prior to the examiner receiving the case for examination. If there were formal problems with the drawings filed 30 October 2003, the case would not be now available for examination. Also, there seems to be nothing in the file history indicating any problem with the drawings. So the drawings are assumed to be acceptable. As for approval by the examiner, this would be required only where the examiner has made specific objections in the record to the subject matter of the drawings, and Applicant then, for example, submitted new drawings in response. No such objections have been made, and no new drawings have been submitted, so the drawings of 30 October 2003 remain approved, both by the examiner and by the pre-exam processors.

Claims 2-26 have been cancelled.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 27-46 and 72-95 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 27 and 72, as amended, the limitation "an epitaxial layer . . . extending from the gate dielectric layer in a horizontal direction substantially parallel to the substrate" is not clear. Does this mean that the epitaxial layer extends substantially parallel to the substrate? Or does this mean that the horizontal direction is substantially parallel to the substrate? Applicant argues that the Nishiyama layers 212 (in figure 10) do not meet this limitation because they extend at an angle (page 11 of the remarks, sixth line from the bottom of the page). But the Nishiyama layers 212 have a segment that extends at an angle, and, in addition, they have a segment that extends parallel to the plane of the substrate. So the layers 212 would extend in a horizontal direction (as well as extending at an angle to the substrate), where the horizontal direction is substantially parallel to the substrate. However, the layers 212 would not extend substantially parallel to the substrate, because the part that extends at an angle to the substrate is itself a substantial part of the layer. So it is essential to understand what it is that is "substantially parallel to the substrate." (The examiner would like to adopt the first definition, to define over the reference.)

Also, the designation "insulating sidewall spacer" is not clear. Applicant argues that the portions of the Nishiyama film 215 adjacent to 208 would not be sidewall spacers, because they are, rather, void-filling insulative regions (page 11 of the remarks, third line from the bottom of the page). But isn't a sidewall spacer a void-filling insulative region? How would one distinguish between a sidewall spacer, and any other type of insulator formed along the gate sidewall?

The designation "sidewall spacers having bottom portions" is also unclear.

Would a "bottom portion" be a portion parallel to the substrate? Certainly the void-filling insulative regions of 215 in Nishiyama figure 10 have bottom portions (extending at an angle) which are in contact with the source/drain regions 212.

In claim 72, what is meant by "a gate dielectric layer includes . . . vertical portions"? Layer 204 of the device of Nishiyama figure 10 certainly has vertical portions, contrary to Applicant's assertions. Is the intention to consider the "gate dielectric layer" as only that part of the insulating layer that directly contacts a channel? This would be an unusual interpretation. One usually interprets "gate dielectric layer" in a functional sense, i.e., as a layer which functions (somewhere) as a gate insulator. That is, the "gate dielectric layer" encompasses the entire layer which has the function of a gate insulator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Crane, whose telephone number is (571) 272-1652.

The supervisor for Art Unit 2811, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

- Application/Control Number: 10/697,826
Art Unit: 2811

Page 5

A handwritten signature in black ink, reading "Sara W. Crane". The signature is written in a cursive style with a large, looping 'S' and a distinct 'W'.

Sara W. Crane
Primary Examiner
Art Unit 2811